# Appropriate release number of juvenile red spotted grouper into nursery reef and fishing port habitat

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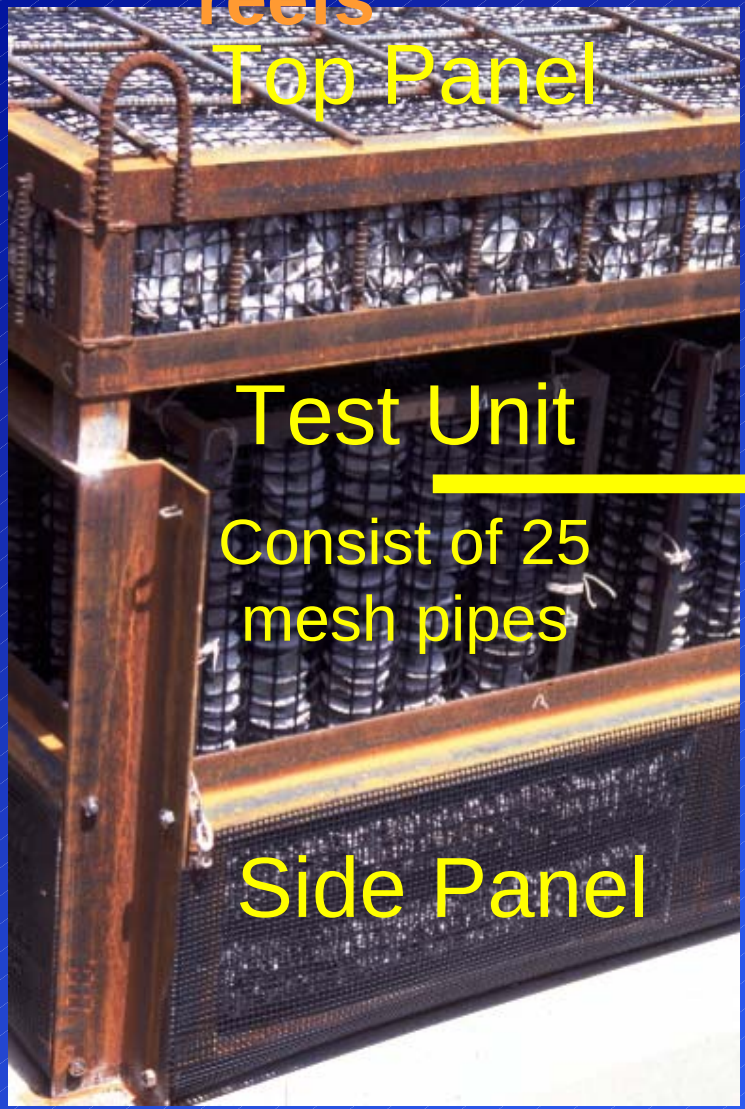
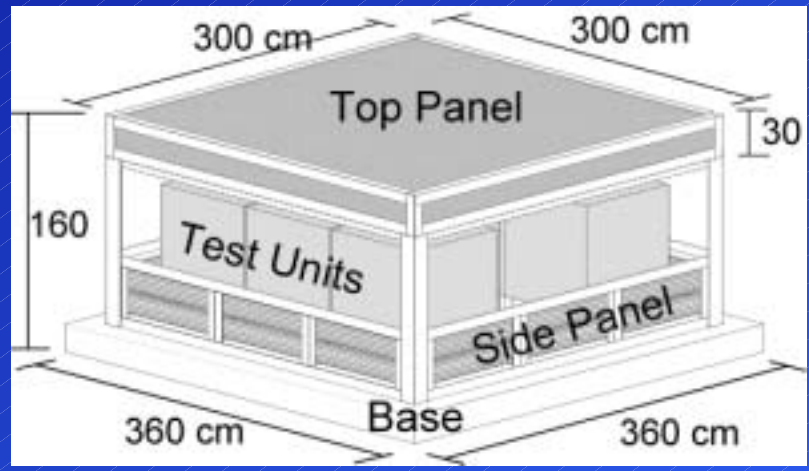
# Release into the nursery reefs




Part of the nursery reef




Structure of the nursery reef

15 cm d.

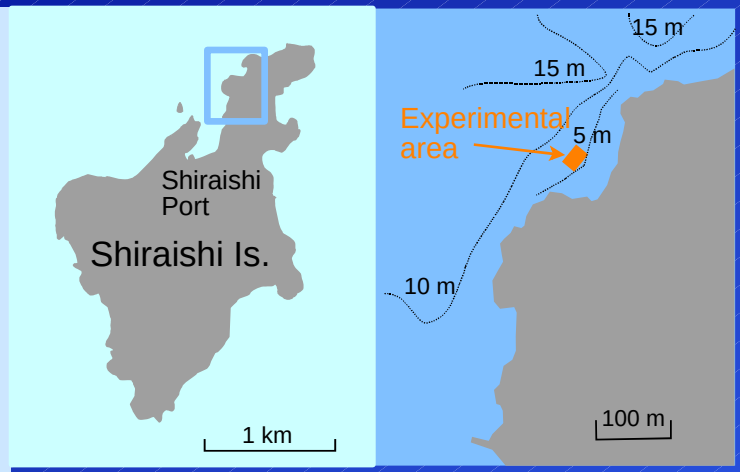
75 cm long

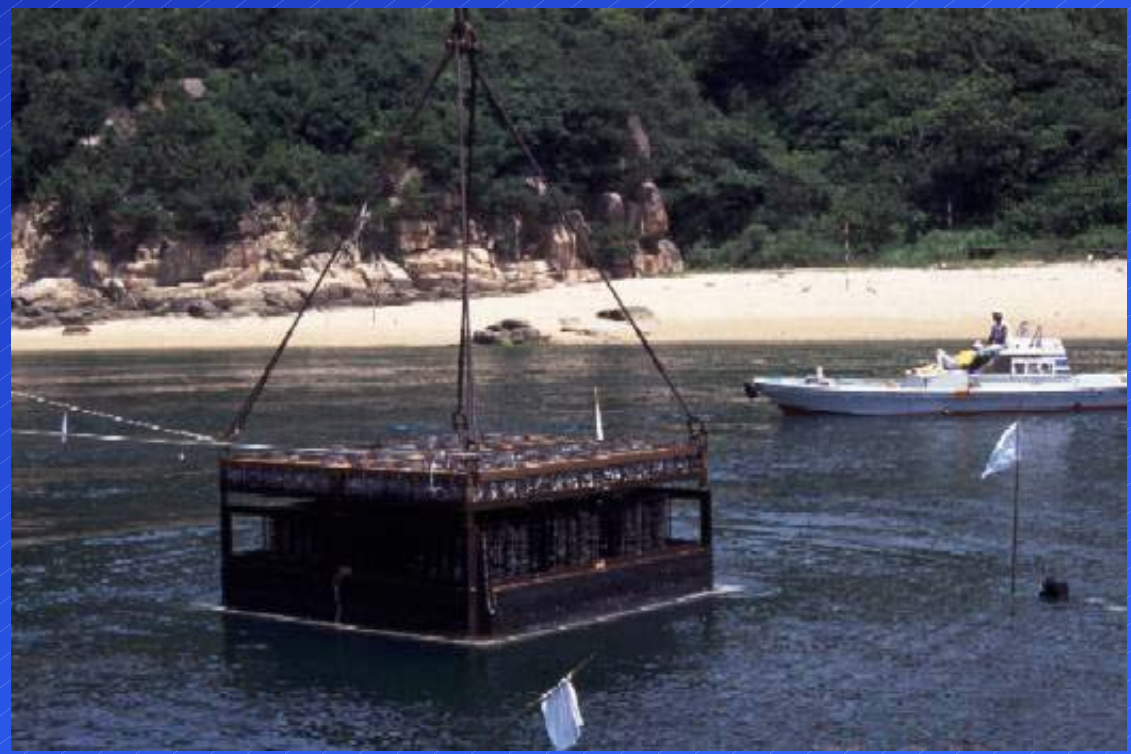
2.8 cm mash

3 cm space

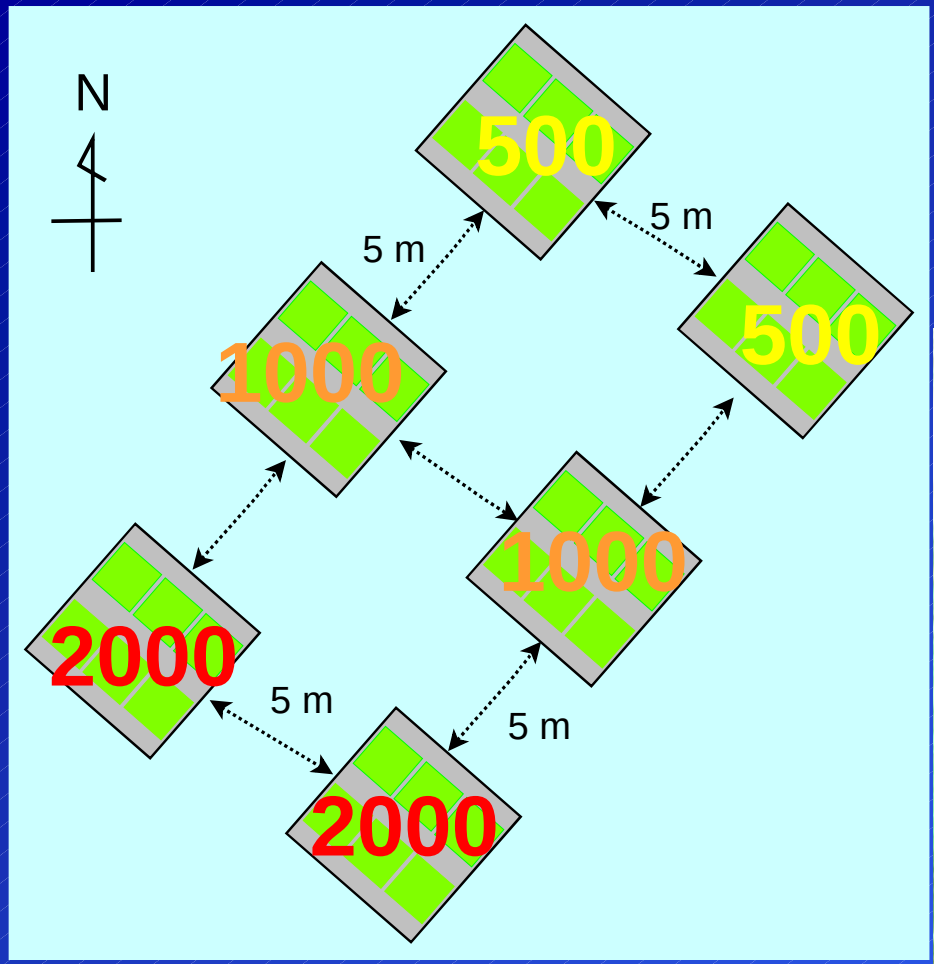
Mesh pipe with scallop shells


Location of the experimental area



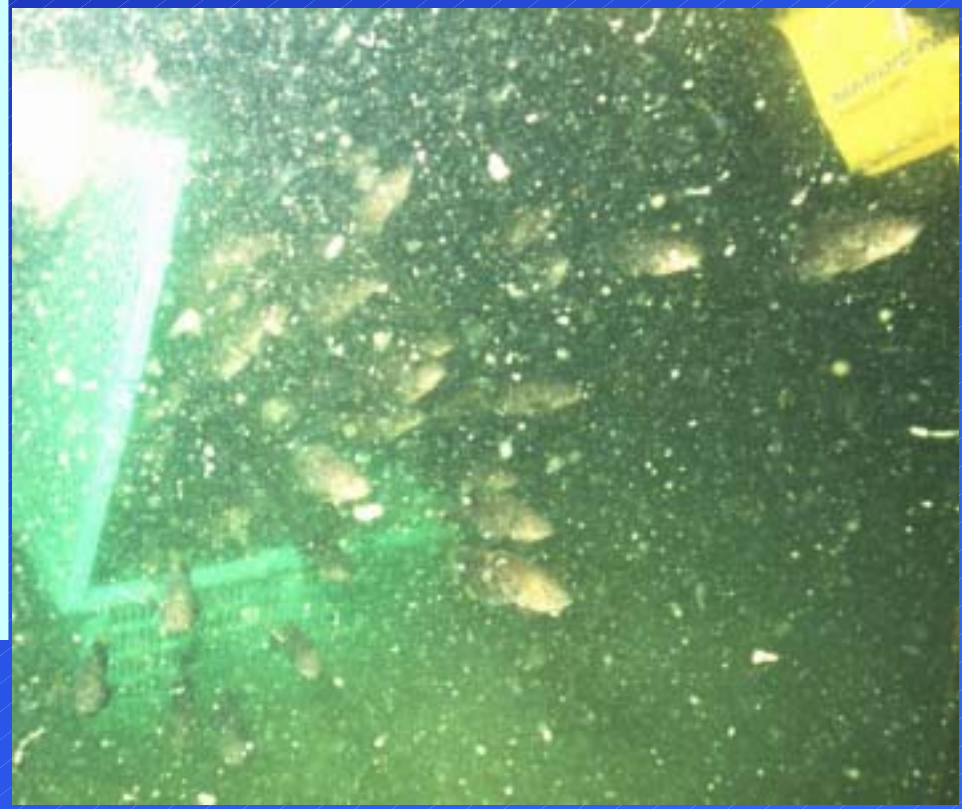
Setting of the nursery reef

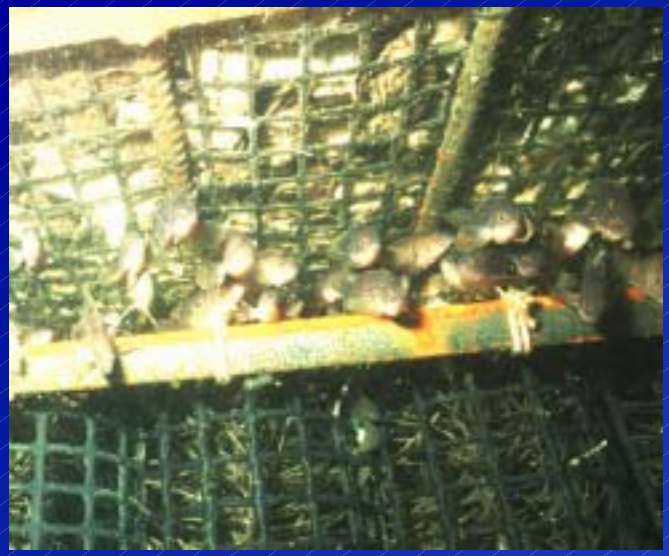



Position of the nursery reefs and number of the released fish

Release in the reef

16 Oct. 2001

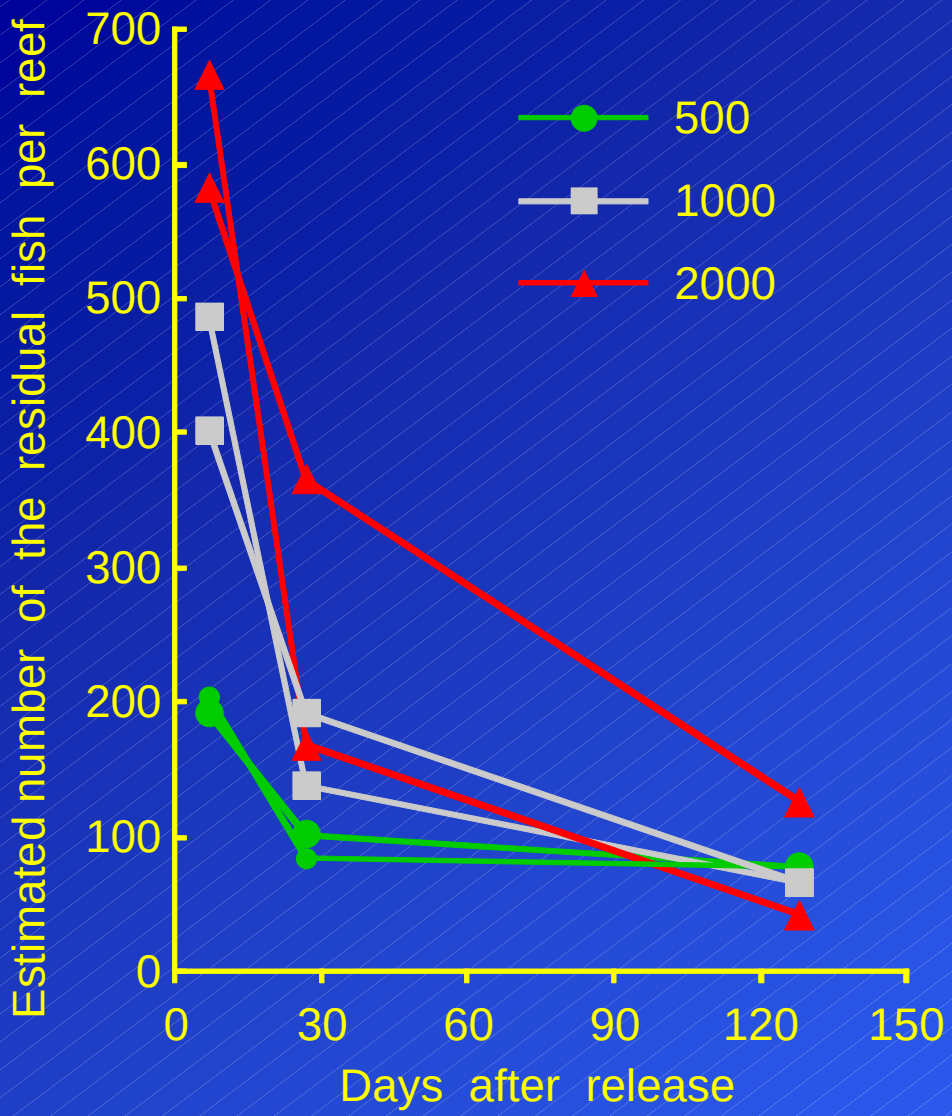


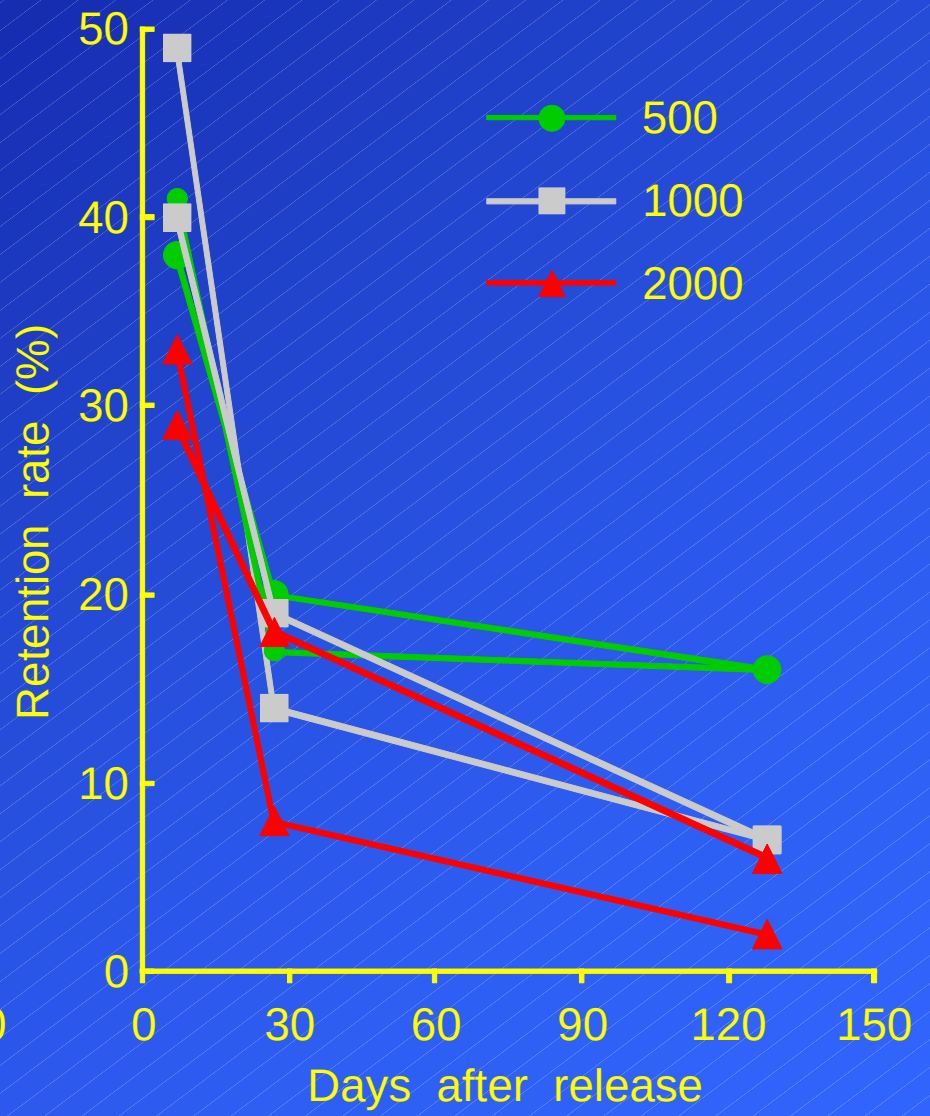


Released fish in the nursery reef

Escaped fish on natural rock

Salvage operation of the test unit




Estimated number of the recaptured fish by salvage operations and retention rates

# Conclusions

The numbers of residual fish in the reefs were directly proportional to the numbers of released fish until one month after release.

The numbers of residual fish were nearly even among the three levels and retention rates were inversely proportional to the released number at four months after release.

Releasing 2000 fish per reef was effective to retain a large number of released fish in a reef for a month.

Releasing 500 fish was efficient to obtain a high retention rate at four months after release.

The appropriate number of released fish should be determined depending on the duration spent in the nursery reef.

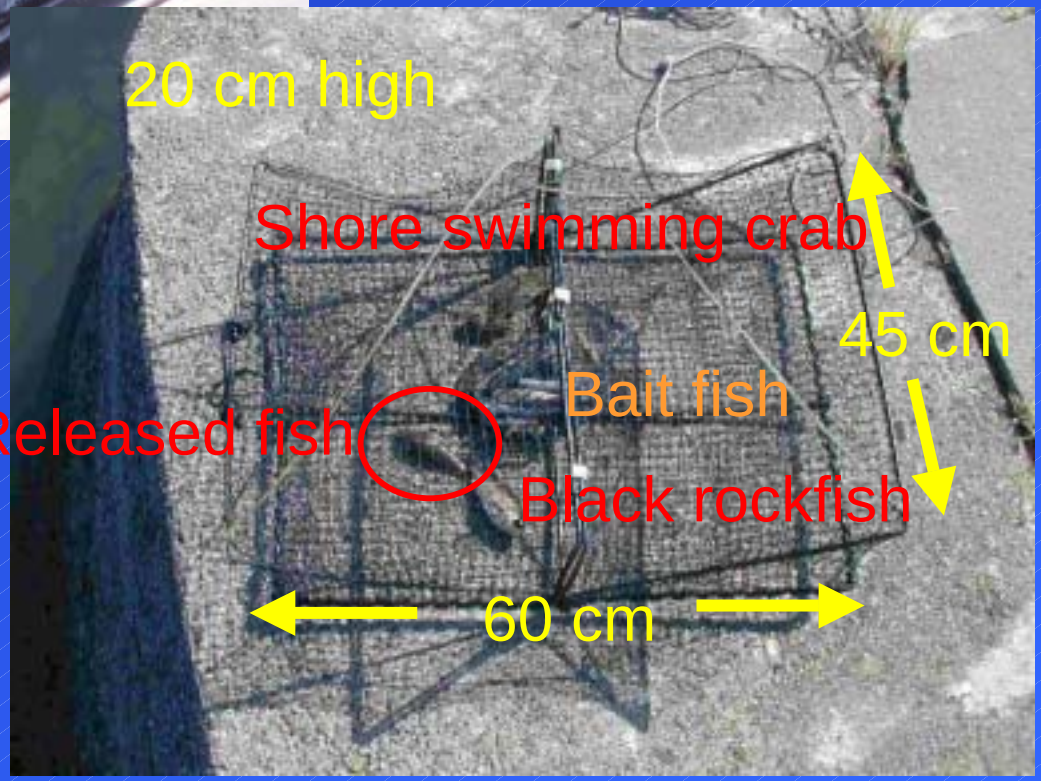
# Release into the fishing port


Location of
Ishima West Port

Ishima West Port
130×40 m 4500 $m^2$
2 – 4 m depth

Release 15000 fish into the port

13 October 1998




The fishing trap used for the recapture operation in Ishima West Port

Results of the recapture operation in Ishima West Port

| Release | | Recapture | | | |
|---|---|---|---|---|---|
| Date | Number | Days after release | Number of traps | Number of recaptured fish | CPUE |
| 13 Oct. 1998 | 15000 | 16 | 16 | 6 | 0.38 |
| 11 Nov. 1999 | 1500 | 28 | 20 | 1 | 0.05 |

## Conclusions

CPUE seemed to be directly proportional to the number of released fish.

The retention rate may be fixed unrelated to the number of released fish within the limits of 1500 – 15000 fish per port.

Further release experiment, less than 1500 fish or more than 15000 fish into the port, will be useful to estimate the carrying capacity of the port.


Thank you.